

A NEW NORTH AMERICAN SPECIES OF *APAMEA*
FORMERLY CONFUSED WITH *A. VERBASCOIDES*
(GUENÉE) (NOCTUIDAE)

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While "sugaring" for moths in early August 1961, near Lake Kejimikujik, Nova Scotia, in what has since become Kejimikujik National Park, I collected five specimens of a species of *Apamea* Ochsenheimer (formerly *Septis* Hübner) that might have been mistaken for *verbascoides* (Guenée) except that they did not appear entirely normal. Even when sitting on the tree trunks the moths seemed smaller and brighter than *verbascoides*, with the gray and reddish areas of the forewings more prominent and contrasting. The species considered to be the true *verbascoides* is not uncommon in that region and was even collected in the same place on the same field trip. Subsequent investigation revealed that the five unusual specimens represent an undescribed species with distinguishing characters in the genitalia of both sexes. Study of material from other collections disclosed that the new species occurs also in eastern Massachusetts, the vicinity of New York City, and in the pine barrens area of New Jersey. In New Jersey it seems to be much commoner than *verbascoides*.

Although it has thus been apparent for some time that two species are involved, I delayed publishing on this problem because of uncertainty as to the proper application of the one available name, *Xylophasia verbascoides* Guenée (1852: 141), based on specimens collected by Edward Doubleday in the state of New York (probably at Trenton Falls, Oneida Co.). The original description does not give the exact locality or the number or sex of the type specimens; no holotype was specified. Through the kindness of Mr. D. S. Fletcher, I have been able to examine one male and two female specimens in the collection of the British Museum (Natural History) that are believed to be syntypes of *verbascoides*. As expected, these clearly represent the larger, commoner, more widely distributed species. None of the supposed syntypes bears an original type label or any label with the name *verbascoides*, and it may therefore be argued that there is no proof of their authenticity as types. However, there is no doubt that the original description fits this species or its sibling herein described, and Guenée clearly stated the source of the specimens as "Amérique du Nord, Etat de New-York. Coll. Doubleday."

The three examples in question in the British Museum are labelled as Doubleday specimens, and it is reasonable to assume that these are the specimens Guenée described, although we cannot be sure that he saw all of them. Assuming that he did, I hereby designate the male of the syntypic series as the lectotype. It bears the following labels: "699" (on green paper); "Xyloph. Cucullioides Gn."; "U.S. America. Doubleday. 46—110."; "Type" (red-bordered circular label). A lectotype label has been added. Guenée did not describe a *Xylophasia cucullioides*, and the meaning of this label is uncertain. There is no *cucullioides* in *Apamea* or in any closely related genus. However, Guenée made a point of comparing *verbascoides* with species of *Cucullia*, deriving the name itself from that of the European *Cucullia verbasci* (L.), and he may have changed his mind about what to call it; or perhaps he or Doubleday simply made a *lapsus calami* in labelling. Other species that appear most closely related are *Apamea nigrior* (Smith) of the Northeast, which is a much duller brown species, and *A. cuculliformis* (Grote) of western North America, easily distinguished by its larger size, paler coloring, and reduced dark markings on the forewing.

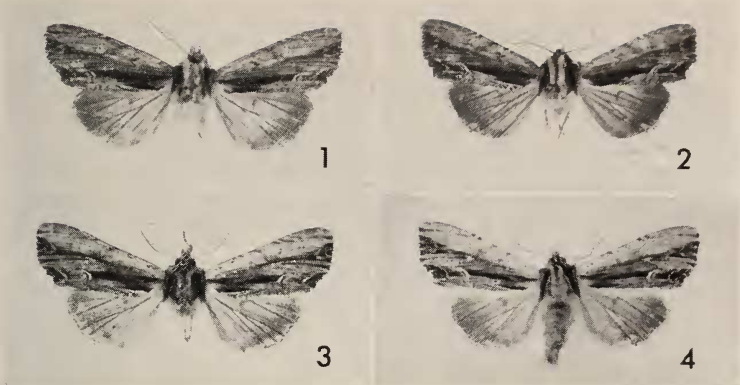
Apamea verbascoides occurs across Canada from Newfoundland to Saskatchewan and in the northern United States from Maine at least to Wisconsin, and southward to Pennsylvania, southern New Jersey, and at higher elevations in the Appalachians to North Carolina. It has one brood which flies from late June to early August. To my knowledge nothing has been reported on the early stages or host plants. The example figured by Holland (1903, pl. 19, fig. 43) is a female of the true *verbascoides*. In the illustrations published by Barnes & McDunnough (1913, pl. 14), figures 1 and 2 are of *verbascoides*, but figure 3 represents the unnamed species, which I describe as follows:

***Apamea inebriata* Ferguson, new species**

Description. Upperside of forewing like that of *A. verbascoides* except for the following differences: areas of brown coloring of a brighter, more red-brown shade, this being especially evident through the middle of the wing longitudinally; costal area with more gray scales; pale zone along inner margin from near base to postmedial line more solidly gray and, especially in fresh females, much more contrasting than in *verbascoides*; basal dash weak or absent and, if present, brown, diffuse, merely a continuation of the deep red-brown shade that runs through middle of wing, not a distinct, tapered, sharp-pointed black streak as in *verbascoides*; small patch of white scales at juncture (or apparent juncture) of M_3 and Cu_1 at outer end of cell, characteristic of *verbascoides*, nearly always absent or much reduced, this point being marked only with a few light yellowish-brown scales or not at all. Although not 100% reliable, this is a very useful character in fresh specimens.

Upperside of hindwing, undersurface, and vestiture of head and body about as in *verbascoides*. No visible differences in antennae, palpi, or other external structures.

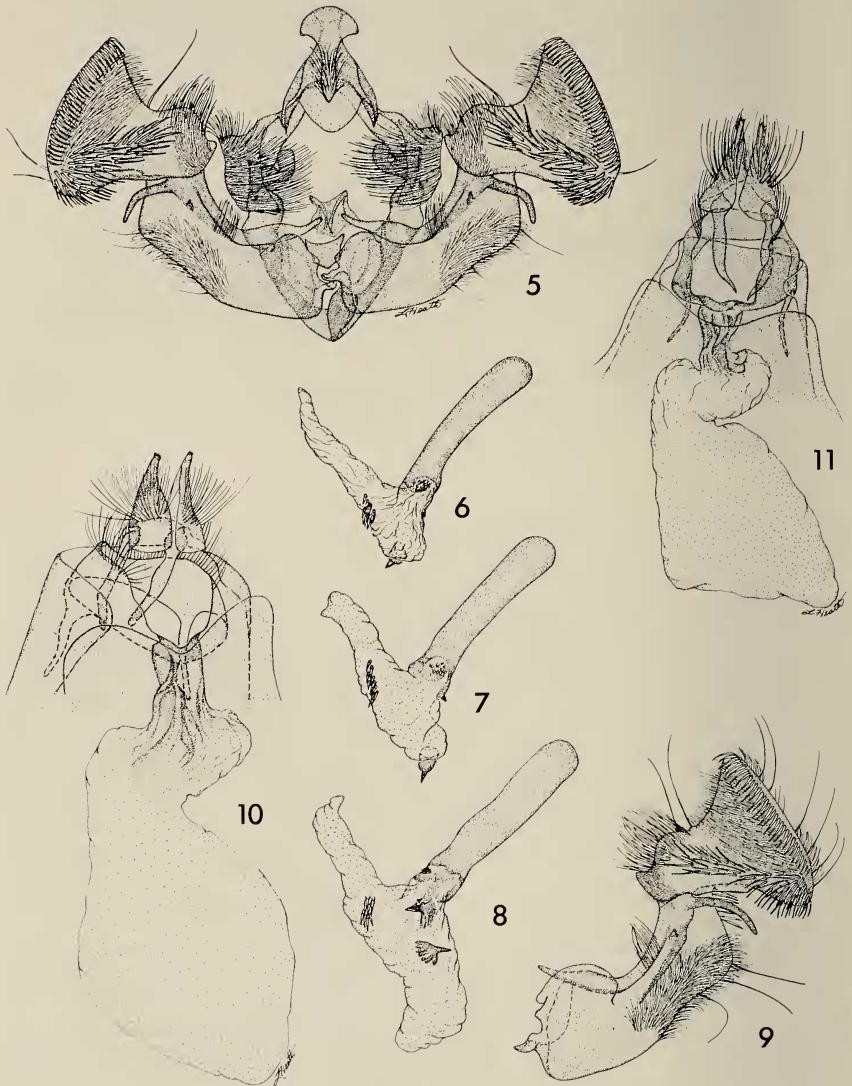
Length of forewing: males, 17–19 mm; females, 15–18 mm; holotype male, 18 mm;



Figs. 1-4. *Apamea* spp. 1, *A. inebriata* ♂, holotype; 2, *A. inebriata* ♀, allotype; 3, *A. verbascoides* ♂, Lake Kejimikujik, Queens Co., Nova Scotia, 8 Aug. 1961; 4, *A. verbascoides* ♀, Halifax watershed area, Halifax Co., Nova Scotia, 28 July 1957. About natural size.

allotype female, 16 mm. Mean wing length: males (of 11), 18.09 mm; females (of 11), 16.95 mm. (For *verbascoides* these measurements are as follows: males, 17.5-20.5 mm; females, 16.5-19.5 mm; lectotype male, 20 mm. Mean wing length: males (of 34), 19.12 mm; females (of 33), 18.27 mm. Although both species are variable, it is thus apparent that the forewing of *inebriata* averages more than one mm shorter than that of *verbascoides*. When series of the two species are compared, the size difference is readily noticeable without measurement.

The most obvious characters in the male genitalia that distinguish this species from *verbascoides* are found in the vesica and in the form of the basocostal lobe of the valve. On the inner face of the valve the basocostal corner takes the form of a large, protuberant, rounded lobe in *verbascoides*, overlying the point of articulation of costa and tegumen; in *inebriata* the lobe is reduced to less than half this size, is somewhat irregular, and does not completely overlie the articulation of costa and tegumen. Also, the lobes are nearly symmetrical in *verbascoides*, more often asymmetrical in *inebriata*, the one on the left valve being shallowly notched, the one on the right valve entire. The sclerotized structures of the aedoeagus and vesica are quite similar in the two species but differently situated, and the vesica itself is differently shaped. The everted vesica consists of two divergent lobes, one being the actual ductus ejaculatorius and the other a blind pouch. The lobe leading to the ductus ejaculatorius bears, dorsally, a cluster of several cornuti similarly situated in the two species. The other lobe bears one large tooth with a broadly expanded base, in *verbascoides* located at about the same relative position as the cluster of small cornuti on the opposite lobe but ventrally; in *inebriata* this large tooth occupies an apical position at the very end of the blind lobe, and the lobe itself is only half as long. There are one or two additional cornuti of intermediate size attached to the wall of the aedoeagus by a straplike connection; in *inebriata* these are smaller, and the straplike connection is only half as long as in *verbascoides*; also, they are located in a left sublateral position instead of being midventral as in *verbascoides*. To the right of this, at the end of the aedoeagus, lies a disk bearing 8 to 20 much smaller cornuti; this is almost exactly ventral in *inebriata* but lies in a right sublateral position in *verbascoides*.



Figs. 5-11. Genitalia of *Apamea* spp. 5, *A. inebriata* ♂, genitalia of holotype, aedeagus omitted; 6, *A. inebriata* ♂, aedeagus of holotype; 7, *A. inebriata* ♂, aedeagus of paratype from Martha's Vineyard, Massachusetts; 8, *A. verbascoides* ♂, aedeagus, West Dover, Halifax Co., Nova Scotia; 9, *A. verbascoides* ♂, right valve of same specimen; 10, *A. verbascoides* ♀, Lake Kejimikujik, Queens Co., Nova Scotia; 11, *A. inebriata* ♀, paratype, Lake Kejimikujik, Nova Scotia.

In the female genitalia the only important difference seems to be in the size of the ductus bursae. This structure is rather rigidly sclerotized, heavily rugose, and finely but densely scobinate in both. In *inebriata*, however, it is shorter and more slender, being no more than two-thirds as thick as that of *verbascoides*.

Types. Holotype: ♂, Lake Kejimikujik, Queens Co., Nova Scotia, August 7, 1961 (at bait), D. C. Ferguson, U.S. National Museum Type No. 74,001 (fig. 1). Allotype: ♀, same data but taken August 6 (fig. 2). Paratypes: 1 ♂, 2 ♀♀, same locality, August 5, 6, 11, 1961, D. C. Ferguson; 1 ♂, Concord, Massachusetts, July 21, 1913, William Reiff; 1 ♂, Martha's Vineyard, Massachusetts, July 29, 1948, F. M. Jones; 1 ♂, "C N.Y./7-8-02," Coll. A. C. Weeks; 1 ♀, "N. York"; 1 ♂, Jerseyville, 3 mi. E of Freehold, New Jersey, July 9, 1961, M. Shulgin; 1 ♀, Freehold, New Jersey, July 17, 1955, M. Shulgin; 8 ♂♂, 3 ♀♀, Lakehurst, New Jersey, June 26–July 27, 1955, J. G. Franclemont; 18 ♂♂, 13 ♀♀, Lakehurst, New Jersey, June 29–30, July 1, 1937, July 1–25, July 4, 1910, July 12, July 17, July 17–30, July 19, July 25, Fredk. Lemmer; 1 ♀, Lakehurst, New Jersey, July 10, 1928, T. D. Mayfield; 2 ♀♀, Pitman, New Jersey, July 11, 1910; 1 ♀, Elizabeth, New Jersey, "8-6-08"; 1 ♀, Morris Co., New Jersey, May 26, 1937 [wrong date?]; 1 ♀, Jersey City, no date. Holotype and allotype in collection of U.S. National Museum; paratypes in U.S. National Museum, American Museum of Natural History, Peabody Museum of Natural History at Yale University, Franclemont collection at Cornell University, Canadian National Collection, Nova Scotia Museum, and British Museum (Natural History).

Distribution. The localities given for the types represent the entire known distribution, which seems limited to areas near the coast. The type-locality, 30 miles from Annapolis Basin, on the Bay of Fundy, is the farthest inland; the U.S. localities all appear to be less than 20 miles from tidewater.

Early stages. Unknown.

Remarks. The habitat where *inebriata* was collected in Nova Scotia is different from that of the New Jersey pine barrens, being Canadian Zone woodland, although of a rather southern type bordering on Transition Zone. It is characterized by a mixture of second growth white and red pine, red spruce, hemlock, balsam fir, beech, red oak, sugar and red maple, white and yellow birch, aspen, ash, hop hornbeam, and a wide variety of shrubs, mainly those that favor acid soil conditions in that region. The moths were taken along old logging roads on the eastern side of Lake Kejimikujik close to the boundary between Annapolis and Queens counties, and about one-third of a mile north of the Grafton Lake fish hatchery. *Apamea inebriata* is a new addition to the list of northeastern endemics with curiously limited, or disjunct, coastal distributions. I believe that these are relicts of a Pleistocene coastal plain fauna which, in part, survived glaciation on large, emergent island refugia off New England, Nova Scotia, and Newfoundland in a climate tempered by proximity to the Gulf Stream. This was the subject of my paper, *The Grand Banks Refugium*, presented at the 1974 annual meeting of The Lepidopterists' Society.

ACKNOWLEDGMENTS

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LITERATURE CITED

- BARNES, W. & J. H. McDUNNOUGH. 1913. Contributions to the natural history of the Lepidoptera of North America 2(1): pls. 1-21.
- GUENÉE, A. 1852. Species Général des Lépidoptères, Noctuérites 1: I-XCVI + 1-407 pp.
- HOLLAND, W. J. 1903 and later editions. The moth book. Doubleday, Page & Co., New York. 479 p., 48 pls.

STAPHYLUS AZTECA, NEW RECORD FOR THE UNITED STATES (HESPERIIDAE)

Staphylus azteca (Scudder, 1872)

Type locality. Tehuantepec, Oaxaca, Mexico.

Distribution. Mexico: Mante, Tamaulipas, June 1967 (H. A. Freeman); Ciudad Valles (Hotel Covadonga), San Luis Potosi, June, July, August 1966-1975 (H. A. Freeman); Tamazunchale, San Luis Potosi, June 1967 (H. A. Freeman); San Blas, Nayarit, September 1966 (W. S. McAlpine); Comala and Colima, Colima, March, April 1967 (Robert Wind); and Catemaco, Veracruz, August 1967 (H. A. Freeman). Guatemala, Salvador, and Costa Rica (various records in the British Museum and American Museum of Natural History, New York).

On 2 June 1940 I collected a female specimen of *Staphylus* at Alpine, Brewster County, Texas, approximately 11 mi. N of town. This specimen was sent to Mr. E. L. Bell at the American Museum of Natural History for determination. In response Mr. Bell wrote that this specimen being a female was not possible to identify as it was not like any they had in the museum and could possibly represent a new species. After searching for males for many years in that general area north of Alpine with no results I finally gave up and left the specimen unidentified in my Texas collection. Recently I re-examined the specimen and compared it with my Mexican *Staphylus* and found it to be *azteca* (Scudder). This represents a new Hesperiidae record for the United States.

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